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EXAMINER	
GUPTA, PARUL H	
ART UNIT	**PAPER NUMBER**
2627	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/721,174	NAKANO, TAKESHI	
	Examiner	Art Unit	
	Parul Gupta	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-20 are pending for examination as interpreted by the examiner. The IDS filed on 11/26/03, 7/27/05, and 4/27/06 were considered.

Specification

2. The disclosure is objected to because of the following informalities: minor typographical errors. Examples include paragraph 0009, where "provides a disk device comprises" should read either "provides a disk device comprising" or "provides a disk device which/that comprises" and "the detection signals includes detrack" should read "the detection signals include detrack". Also, "tacking error signal TE are supplied" should read "tracking error signal TE are supplied" in paragraph 0030 and "form under control" should read "from under control" in paragraph 0035. Appropriate correction is required.

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

4. Claim 1 is objected to because of the following informalities: minor typographical errors such as the use of the phrase "failed to correctly detected by the detector section" which should read "failed to correctly be detected by the detector section" instead. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 8-11, and 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Shim, US Patent 6,333,902.

Regarding claim 1, Shim discloses in figure 7 a disk device comprising: a detector section which detects detection signals from reflected lights of laser lights emitted on a disk, (done by element 1102) the detection signals includes detrack components ("offset" of RF signal), which is failed to correctly detected by the detector section; a removing section which detects the detrack components, and removes the same from the detection signals (1104 and 1106); and a processing section which applies a predetermined processing on the detection signals removed detrack components by the removing section (1107).

Regarding claim 8, Shim discloses in figure 9 a disk device according to claim 1, wherein the removing section passes the detection signals through filters to output the same, and removes the detrack components.

Regarding claim 9, Shim discloses in figure 7 a disk device according to claim 1, wherein the removing section removes the detrack components by giving predetermined potentials ("EFMS") to input terminals of the processing section instead of supplying the detection signals thereto.

Regarding claim 10, Shim discloses in figure 7 a disk device according to claim 1, wherein the removing section removes the detrack components in a state where the detection signals are not supplied to the input terminals of the processing section so that noting is connected thereto. The given figure shows how the offset is removed well before the signals are used by any processing section.

Regarding claim 11, Shim discloses a disk processing method comprising: detecting detection signals from reflected lights of laser lights emitted on a disk, the detection signals includes detrack components, which is failed to correctly detected by the detector section (function performed by optical pickup); detecting the detrack components, and removing the same from the detection signals (column 7, lines 46-48); and applying a predetermined processing on the detection signals removed detrack components (column 7, lines 49-62).

Regarding claim 18, Shim discloses a disk processing method according to claim 11, wherein the step of removing passes the detection signals through filters to output the same, and removes the detrack components (column 8, lines 34-48).

Regarding claim 19, Shim discloses a disk processing method according to claim 11, wherein the step of removing removes the detrack components by giving predetermined potentials ("EFMS" based on comparison with predetermined Vref) to input terminals of the processing section of the disk device instead of supplying the detection signals thereto (column 9, lines 1-4).

Regarding claim 20, Shim discloses a disk processing method according to claim 11, wherein the step of removing removes the detrack components in a state where the detection signals are not supplied to the input terminals of the processing section of the disk device so that nothing is connected thereto (column 7, lines 46-48 explain how the offset is removed, showing that only the modified RF signal is passed through to the processing section).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2-7 and 12-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shim in view of Ma et al., US Patent Publication 2002/0006091.

Shim teaches the disk device with all of the limitations of claim 1 and corresponding method with all of the limitations of claim 11, but fails to teach the further limitations of claims 2, 3, 5-7, 12, 13, and 15-17. In addition, Shim teaches the detrack component removal method from the RF signal, unlike Ma et al, who teaches it from the tilt error signal. However, the method used by Ma et al. can be incorporated into the system of Shim.

Regarding claim 2, Ma et al. teaches in figure 5 a disk device, wherein the detection signals have a plurality of detection signals from a detector which is divided in

plurality, and the removing section detects the detrack components on the basis of magnitude of potentials of the plurality of detection signals (phase comparisons).

Regarding claim 3, Ma et al. teaches in figure 7 a disk device, wherein the detection signals have four detection signals (A, B, C, and D) from a quartered detector (40), and, when a differential signal (judged by elements 51 and 53) between a sum of two signals at one side (a and b) and a sum of two signals at the other side (c and d) which are divided into two sides by a track axis of the disk exceeds a predetermined value, the removing section determines that detrack components which have failed to detect recording information on the disk are included in the detection signals, and removes the detrack components (paragraph 0017). The last sentence of paragraph 0086 explains how the detector may be constructed in another way according to the type of medium used. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system to make it a push-pull system due to the type of recording medium used. This method would then take the differential signal of the amplitude instead of the phase as shown in the figures.

Regarding claim 4, Ma et al. teaches in figure 3 a disk device, wherein the removing section receives control signals supplied from a flywheel for estimating a change in a succeeding detection signal on the basis of a change in a recording signal which records RF signals amplified from detection signals detected by the detector section for a predetermined period (50), and removes detrack components of the detection signals according thereto (explained in paragraph 0061).

Regarding claim 5, Ma et al. teaches in figure 7 a disk device, wherein the detection signals have four detection signals (A, B, C, and D) from a quartered detector (40) which receives reflected lights from DVD (Digital Versatile Disk)-RAM (Random Access Memory) (paragraph 0007), and, when a differential signal (judged by elements 51 and 53) between a sum of two signals in a detector at one side (a and b) and a sum of two signals in a detector at the other side (c and d) which are divided into two sides by a track axis of the disk exceeds a predetermined value, the removing section determines that detrack components which have failed to detect the recording information are contained in the detection signals (paragraph 0017), and removes the detrack components by selecting at least one of the two signals in the detector at one side and the two signals in the detector at the other side according to the differential signal (paragraph 0068 explains how the noise component is essential removed by adding opposite phase detection signals, which would serve the same purpose since two signals have the same phase and the other two are opposite in phase). The last sentence of paragraph 0086 explains how the detector may be constructed in another way according to the type of medium used. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system to make it a push-pull system due to the type of recording medium used. This method would then take the differential signal of the amplitude instead of the phase as shown in the figures.

Regarding claim 6, Ma et al. teaches in figure 7 a disk device, wherein the detection signals have four detection signals (A, B, C, and D) from a quartered detector (40) which receives reflected lights from DVD-R or DVD-RW (paragraph 0007), and,

when a differential signal (judged by elements 51 and 53) between a sum of two signals in a detector at one side (a and b) and a sum of two signals in a detector at the other side (c and d) which are divided into two sides by a track axis of the disk exceeds a predetermined value, the removing section determines that detrack components which have failed to detect the recording information are included in the detection signals (paragraph 0017), and removes at least one of the two signals in the detector at one side and the two signals in the detector at the other side (paragraph 0068 explains how the noise component is essential removed by adding opposite phase detection signals, which would serve the same purpose since two signals have the same phase and the other two are opposite in phase). The last sentence of paragraph 0086 explains how the detector may be constructed in another way according to the type of medium used. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system to make it a push-pull system due to the type of recording medium used. This method would then take the differential signal of the amplitude instead of the phase as shown in the figures.

Regarding claim 7, Ma et al. teaches in figure 7 a disk device, wherein the detection signals have four detection signals (A, B, C, and D) from a quartered detector (40) which receives reflected lights from DVD-RAM, DVD-R, or DVD-RW (paragraph 0007), the removing section determines that detrack components which have failed to detect the recording information are included in the detection signals when a differential signal (judged by elements 51 and 53) between a sum of two signals in a detector at one side (a and b) and a sum of two signals in a detector at the other side (c and d)

which are divided into two sides by a track axis of the disk exceeds a predetermined value (paragraph 0017), and identifies a type of the disk, and selects and removes one of the two signals in the detector at one side and the two signals in the detector at the other side according to the differential signal when the disk is DVD-RAM, and identifies a type of the disk, and removes at least one of the two signals in the detector at one side and the two signals in the detector at the other side when the disk is DVD-R or DVD-RW. Paragraphs 0086-0090 explain how a certain signal is removed to eliminate detrack components. Paragraph 0086 explains that the error is detected different ways based on the type of recording medium used. The last sentence of paragraph 0086 explains how the detector may be constructed in another way according to the type of medium used. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system to make it a push-pull system due to the type of recording medium used. This method would then take the differential signal of the amplitude instead of the phase as shown in the figures.

Regarding claim 12, Ma et al. teaches a disk processing method, wherein the detection signals have a plurality of detection signals from a detector which is divided in plurality, and the detrack components are detected on the basis of magnitude of potentials of the plurality of detection signals (paragraph 0011).

Regarding claim 13, Ma et al. teaches a disk processing method, wherein the detection signals have four detection signals from a quartered detector, and, when a differential signal between a sum of two signals in a detector at one side and a sum of

two signals in a detector at the other side which are divided into two sides by a track axis of the disk exceeds a predetermined value, the step of removing determines that detrack components which have failed to detect recording information on the disk are included in the detection signals, and removes the detrack components (paragraph 0017). The last sentence of paragraph 0086 explains how the detector may be constructed in another way according to the type of medium used. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system to make it a push-pull system due to the type of recording medium used. This method would then take the differential signal of the amplitude instead of the phase as shown in the figures.

Regarding claim 14, Ma et al. teaches a disk processing method, wherein the step of removing receives control signals supplied from a flywheel circuit for estimating a change in a succeeding detection signal on the basis of a change in a recording signal which records RF signals amplified from the detected detection signals for a predetermined period (paragraph 0047), and removes the detrack components ("noise component") of the detection signals according thereto (paragraph 0061). Paragraph 0047 explains how the error is detected with respect to the reproduction signal from the recording medium, which is the RF signal.

Regarding claim 15, Ma et al. teaches a disk processing method, wherein the detection signals have four detection signals from a quartered detector (paragraphs 0039 and 0040) which receives reflected lights from DVD (Digital Versatile Disk)-RAM (Random Access Memory) (paragraph 0007), and, when a differential signal between a

sum of two signals in a detector at one side and a sum of two signal in a detector at the other side which are divided into two sides by a track axis of the disk exceeds a predetermined value, the step of removing determines that detrack components which have failed to detect the recording information are contained in the detection signals (paragraph 0017), and selects and removes at least one of the two signals in the detector at one side and the two signals in the detector at the other side according to the differential signal (paragraph 0068 explains how the noise component is essential removed by adding opposite phase detection signals, which would serve the same purpose since two signals have the same phase and the other two are opposite in phase). The last sentence of paragraph 0086 explains how the detector may be constructed in another way according to the type of medium used. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system to make it a push-pull system due to the type of recording medium used. This method would then take the differential signal of the amplitude instead of the phase as shown in the figures.

Regarding claim 16, Ma et al. teaches a disk processing method, wherein the detection signals have four detection signals from a quartered detector (paragraphs 0039 and 0040) which receives reflected lights from DVD-R or DVD-RW (paragraph 0007), and, when a differential signal between a sum of two signals in a detector at one side and a sum of two signals in a detector at the other side which are divided into two sides by a track axis of the disk exceeds a predetermined value, the step of removing determines that detrack components which have failed to detect the recording

information are included in the detection signals (paragraph 0017), and removes at least one of the two signals in the detector at one side and the two signals in the detector at the other side (paragraph 0068 explains how the noise component is essential removed by adding opposite phase detection signals, which would serve the same purpose since two signals have the same phase and the other two are opposite in phase). The last sentence of paragraph 0086 explains how the detector may be constructed in another way according to the type of medium used. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system to make it a push-pull system due to the type of recording medium used. This method would then take the differential signal of the amplitude instead of the phase as shown in the figures.

Regarding claim 17, Ma et al. teaches a disk processing method, wherein the detection signals have four detection signals from a quartered detector (paragraphs 0039 and 0040) which receives reflected lights from DVD-RAM, DVD-R, or DVD-RW (paragraph 0007), and when a differential signal between a sum of two signals in a detector at one side and a sum of two signals in a detector at the other side which are divided into two sides by a track axis of the disk exceeds a predetermined value, the step of removing determines that detrack components which have failed to detect the recording information are included in the detection signals (paragraph 0017), identifies a type of the disk, and selects and removes one of the two signals in the detector at one side and the two signals in the detector at the other side according to the differential signal when the disk is DVD-RAM, and identifies a type of the disk, and removes at

least one of the two signals in the detector at one side and the two signals in the detector at the other side when the disk is DVD-R or DVD-RW. Paragraphs 0086-0090 explain how a certain signal is removed to eliminate detrack components. Paragraph 0086 explains that the error is detected different ways based on the type of recording medium used. The last sentence of paragraph 0086 explains how the detector may be constructed in another way according to the type of medium used. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system to make it a push-pull system due to the type of recording medium used. This method would then take the differential signal of the amplitude instead of the phase as shown in the figures.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of the given device and method of removing detrack components as taught by Ma et al. into the system of Shim. This would serve the purpose of providing an error signal detection apparatus and method for an optical recording/reproducing system, which is less affected by detrack, and external noise due to high signal-to-noise ratio (paragraph 0009 of Ma et al.).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wachi, US Patent 5,148,424 discloses a method of detrack detection using multiple detection signals.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Parul Gupta whose telephone number is 571-272-5260. The examiner can normally be reached on Monday through Thursday, from 8:30 AM to 7 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrea Wellington can be reached on 571-272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PHG
8/21/06

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